Remarks/Arguments:

Claims 13-24 are pending. Claims 1-12 and 25-85 have been withdrawn from examination.

Claims 13-18 and 21-24 have been rejected under 35 U.S.C. § 102(b) as anticipated by Li et al. (Nanostructuring in Submicron-Level Waveguides with Femtosecond Laser Pulses, referred to herein as Li et al. I). This rejection is traversed for the reason set forth below.

Li et al. I discloses a method of drilling air holes in a waveguide to form a one dimensional photonic crystal. This method includes positioning a laser beam at the center of the waveguide and then producing ultrafast laser pulses to drill a hole by laser ablation. The method of positioning the laser beam at the center of the waveguide is disclosed in section 3 of the article beginning at line 139 and is illustrated in Figure 3. This method involves drilling additional holes in the neighborhood of the waveguide and imaging both the additional holes and the waveguide with a digital camera. Although images of both the additional holes and the waveguide are blurry, it is possible to determine the location of the center points of the additional holes and the centerline of the waveguide. An offset distance from the center points of the additional holes to the centerline of the waveguide may then be determined from their relative locations in the image and knowledge of the parameters of the digital camera. The sample stage is then moved to zero this offset, positioning the laser beam somewhere along the centerline of the waveguide.

Li et al. I only discloses that their method is useful for drilling holes on the centerline of a waveguide to form a one dimensional photonic crystal. Claim 13 recites a method for "...manufacturing a micro-optical device..." In paragraph [0056]:

> It is noted that in the present disclosure micro-optical devices are defined as discrete optical devices or arrays of optical devices formed from optical material. Photonic crystals are defined as a type of optical material and are not defined as micro-optical devices themselves, although an optical device could be formed from photonic crystal material.

This definition is based, in part, on the additional difficulties that may be encountered manufacturing a micro-optical, as opposed to drilling a regular array of holes to form photonic crystal material. Thus, because Li et al. I only discloses forming a one dimensional photonic

crystal; its method does not disclose all of the features of the present invention. In particular, Li et al. I does not disclose or suggest, at least one feature recited in claim 13, namely:

> ... determining coordinates of a reference point and an orientation of the submicron feature of the top surface of the micro-optical device preform in the image coordinate system using the alignment image... (Emphasis added)

This feature of the present invention is described in the specification at paragraph **[0061]**.

Li et al. I does not disclose determining coordinates of a reference point of a submicron feature nor does it disclose determining the orientation of the submicron feature, as recited in claim 13. Instead, Li et al. I determines the offset between the center of an additional hole formed in the neighborhood of a waveguide and the centerline of the waveguide. This offset allows a hole to be drilled at a point somewhere along the centerline of the waveguide using the method of Li et al. I.

By "...determining coordinates of a reference point and an orientation of the submicron feature...," the method of claim 13 necessarily locates the submicron feature and a fine feature on the submicron feature of a micro-optical device in two dimensions "...with a tolerance less than an illumination wavelength..." The method of Li et al. I cannot accomplish this two dimensional location.

Further, because such two dimensional location of a fine feature is unnecessary to forming photonic crystal material; it would not have been obvious to one skilled in the art to add this feature to the method of Li et al. I prior to the present application.

In view of this deficiency, Applicant respectfully submit that claim 13 is not subject to rejection under 35 U.S.C. § 102(b) as being anticipated by Li et al. I. Because claims 14-18 and 21-24 depend from claim 13, these claims also not subject to rejection under 35 U.S.C. § 102(b) as being anticipated by Li et al. I.

Claim 19 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Li et al. I in view of US Patent No. 6,856,712 to Fauver et al. and claim 20 has been rejected under 35

U.S.C. § 103(a) as unpatentable over Li et al. I in view of US Patent No. 6,951,627 to Li et al. (Li et al. II). These rejections are traversed for the reasons set forth below.

Both claim 19 and claim 20 depend from claim 13. Neither Fauver et al. nor Li et al. II disclose determining coordinates of a reference point of a submicron feature or determining the orientation of the submicron feature on the surface of a micro-optical device. Therefore, neither Fauver et al. nor Li et al. II can overcome the deficiencies of Li et al. I with respect to claim 13.

In view of this deficiency, Applicant respectfully submit that claim 19 is not subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Li et al. I in view of Fauver et al. and that claim 20 is not subject to rejection under 35 U.S.C. § 103(a) as unpatentable over Li et al. I in view of Li et al. II.

The prior art made of record but not applied has been considered but does not affect the patentability of the invention.

Conclusion

In view of the foregoing amendments and remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 13-24.

Respectfully submitted,

Kenneth N. Nigon, Reg. No. 31,549
Lowell L. Carson, Reg. No. 48,548
Attorneys for Applicants

KNN/LLC/ks

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P.O. Box 980
Valley Forge, PA 19482
(610) 407-0700

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